

Claims

1. A method of producing a fermentation product, said method comprising preliquefaction of non-starch polysaccharides in the presence of a beta-glucanase, followed by gelatinization, followed by liquefaction in the presence of a thermostable beta-glucanase and a xylanase.
2. A method of producing a fermentation product, said method comprising preliquefaction of non-starch polysaccharides in the presence of a beta-glucanase, followed by jet cooking and liquefaction in the presence of a thermostable beta-glucanase and a xylanase.
3. A method of producing a fermentation product, said method comprising the steps of:
- providing a mash comprising a starch containing material and water;
 - preliquefying the mash of step (a) in the presence of a beta-glucanase;
 - gelatinizing the mash of step (b);
 - liquefying the mash of step (c) in the presence of an alpha-amylase, a beta-glucanase and a xylanase; and
 - saccharifying and fermenting the mash of step (d) to produce the fermentation product.
4. The method of any of the preceding claims, further comprising a pre-saccharification step which is performed after the liquefaction step (d) and before step (e).
5. The method of any of the preceding claims, further comprising recovery of the fermentation product.
6. The method of any of the preceding claims, wherein the fermentation product is; alcohols (in particular ethanol); acids, such as citric acid, itaconic acid, lactic acid, gluconic acid, lysine; ketones; amino acids, such as glutamic acid; antibiotics, such as penicillin, tetracyclin; enzymes; vitamins, such as riboflavin, B₁₂, beta-carotene; hormones, such as insulin.
7. The method of any of the preceding claims, wherein the xylanase is derived from a strain of *Aspergillus* sp., preferably from a strain of *A. Aculeatus*.
8. The method of any of the preceding claims, wherein the beta-glucanase is derived from a strain of *Bacillus* sp., preferably from a strain of *B. amyloliquefaciens*.
9. The method of any of the preceding claims, wherein also an endo-glucanase is present in the liquefaction step (d), said endo-glucanase preferably derived from a strain of *Trichoderma* sp., preferably from a strain of *T.reesei*.

10. The method of any of the preceding claims, wherein the starch containing material is obtained from cereals and/or tubers.
11. The method of any of the preceding claims, wherein the starch containing material is selected from the groups consisting of maize, wheat, barley, rye, millet, sorghum, and milo.
12. The method of any of the preceding claims, wherein the starch containing material is selected from the groups consisting of potato, sweet potato, cassava, tapioca, sago, banana, sugar beet and sugar cane.
13. The method of any of the preceding claims wherein the fermentation in step (e) is performed using a micro-organism, such as bacteria and fungi (including yeasts), e.g. *Zymomonas* species and *Sacharomyces* species. such as e.g. *Saccharomyces cerevisiae*.
14. The method of any of the preceding claims, wherein the fermentation is carried out in the presence of phytase and/or protease.
15. The method of any of the preceding claims, wherein preliquefaction in step (b) is performed at temperature of 45 to 70°C, more preferably to 53 to 66°C, most preferably to 55 to 60°C, such as 58°C for a period of 5 to 60 minutes, and more preferably 10 to 30 minutes, such as around 15 minutes.
16. The method of any of the preceding claims, wherein the liquefaction in step (d) is performed at 60-95°C, preferably 80-90°C for 10-120 min, more preferably at 83-85 °C for 15-80 min.
17. A use of a thermostable beta-glucanase and a xylanase in a liquefaction step in a process for production of ethanol.
18. Use according to the preceding claim, wherein the starch-containing raw material used in the process for production of the ethanol, is as defined in any of claims 6-8.
19. Use according to the preceding claim, wherein the ethanol is to be used as a potable alcohol, a fuel alcohol and/or a fuel additive.